

6 a second mirror surface which is operative to focus an annular beam reflected by
7 said first mirror surface to a location located interior of said pair of coaxial spaced electrodes;
8 and

9 a spatial filter disposed at said location located interior of said pair of coaxial
10 spaced electrodes.

1 35. A gas laser according to claim 34 and wherein said second mirror structure
2 comprises:
3 a third mirror surface located at an opposite end of the annular optical cavity.

1 36. A gas laser according to claim 31 and also comprising an output
2 coupler.

REMARKS

Claims 3, 4, 6, 9, 12, 15, 17, 18, 20, 23, 24, 26, 29, 31, 33, 34 and 36 have been amended. Examination of the application, as amended, is respectfully requested. If the Examiner believes a telephone conference would expedite prosecution of this application, please telephone the undersigned at 303-571-4000.

Respectfully submitted,

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Marked Claims Pursuant to 37 CFR §1.121(c)

- 1 1. A gas laser comprising:
2 an annular optical cavity defined by a pair of coaxial spaced electrodes which
3 produces an annular coherent beam of a first diameter and a first thickness;
4 a mirror structure located at one end of the annular optical cavity and including:
5 a first mirror surface which is operative to decrease the diameter of the
6 annular coherent beam from said first diameter and to expand the thickness of the annular
7 coherent beam from said first thickness;
8 a second mirror surface which is operative to focus a beam reflected by said first
9 mirror surface to a location located interiorly of said pair of coaxial spaced electrodes;
10 a third mirror surface located at an opposite end of the annular optical cavity; and
11 an output coupler operative to receive, reflect and transmit a beam reflected by said second
12 mirror surface.
- 1 2. A laser according to claim 1 and wherein said first mirror surface is an off-
2 axis parabolic rotationally symmetric surface.
- 1 3. (Amended) A laser according to claim 1 [or claim 2] and wherein said
2 second mirror surface is art off-axis ellipsoidal rotationally symmetric surface.
- 1 4. (Amended) A gas laser according to claim 1 [any of claims 1 - 3] and
2 wherein:
3 said annular optical cavity is defined by inner and outer coaxial spaced electrodes
4 which produces an annular coherent beam; and
5 said gas laser also comprises an RF power supply coupled to said outer electrode at at least one
6 location symmetrical with respect to the length thereof.
- 1 5. A gas laser according to claim 4 and wherein the inner electrode is
2 grounded.
- 1 6. (Amended) A gas laser according to claim 4 [or claim 5] and comprising
2 a grounded structure surrounding the annular optical cavity.

1 7. A gas laser according to claim 6 and wherein first and second ends of said
2 outer electrode are coupled to said grounded structure via a plurality of induction coils.

1 8. A gas laser according to claim 4 and wherein said at least one location is a
2 location centered with respect to the length of said outer electrode.

1 9. (Amended) A gas laser according to claim 1 [any of the preceding
2 **claims**] and wherein said mirror structure is grounded.

1 10. A gas laser comprising:
2 an annular optical cavity defined by inner and outer coaxial spaced electrodes
3 which produces an annular coherent beam; and
4 an RF power supply coupled to said outer electrode at at least one location symmetrical with
5 respect to the length thereof.

1 11. A gas laser according to claim 10 and wherein the inner electrode is
2 grounded.

1 12. (Amended) A gas laser according to claim 10 [**or claim 11**] and
2 comprising a grounded structure surrounding the annular optical cavity.

1 13. A gas laser according to claim 12 and wherein first and second ends of
2 said outer electrode are coupled to said grounded structure via a plurality of induction coils.

1 14. A gas laser according to claim 10 and wherein said at least one location is
2 a location centered with respect to the length of said outer electrode.

1 15. (Amended) A gas laser according to claim 10 [any of claims 10 - 14] and
2 also comprising:

3 a grounded structure surrounding the annular optical cavity and including first and
4 second portions having precisely formed first and second mating surfaces,

5 said first portion having machined thereon a first mirror structure located at one
6 end of the annular optical cavity; and

7 said second portion having machined thereon a second mirror structure located at one end of the
8 annular optical cavity.

1 16. A gas laser according to claim 15 and wherein said first mating surface
2 and said first mirror structure are machined together so as to ensure desired alignment
3 therebetween.

1 17. (Amended) A gas laser according to claim 15 **[or claim 16]** and wherein
2 said second mating surface and said second mirror structure are machined together so as to
3 ensure desired alignment therebetween.

4 18. (Amended) A gas laser according to claim 15 **[any of claims 15 — 17]**
5 and wherein said first mirror structure comprises:

6 a first mirror surface which is operative to decrease the diameter of the annular
7 coherent beam from said first diameter and to expand the thickness of the annular coherent beam
8 from said first thickness;

9 a second mirror surface which is operative to focus an annular beam reflected by
10 said first mirror surface to a location located interior of said pair of coaxial spaced electrodes;
11 and

12 a spatial filter disposed at said location located interior of said pair of coaxial
13 spaced electrodes.

1 19. A gas laser according to claim 18 and wherein said second mirror structure
2 comprises:

3 a third mirror surface located at an opposite end of the annular optical cavity.

1 20. (Amended) A gas laser according to claim 15 **[any of claims 15 — 19]**
2 and also comprising an output coupler.

1 21. A gas laser comprising:

2 an annular optical cavity defined by inner and outer coaxial spaced electrodes
3 which produces an annular coherent beam;

4 a grounded structure surrounding the annular optical cavity and including first and
5 second portions having precisely formed first and second mating surfaces,

6 said first portion having machined thereon a first mirror structure located at one
7 end of the annular optical cavity; and

8 said second portion having machined thereon a second mirror structure located at one end of the
9 annular optical cavity.

1 22. A gas laser according to claim 21 and wherein said first mating surface
2 and said first mirror structure are machined together so as to ensure desired alignment
3 therebetween.

1 23. (Amended) A gas laser according to claim 21 **[or claim 22]** and wherein
2 said second mating surface and said second mirror structure are machined together so as to
3 ensure desired alignment therebetween.

1 24. (Amended) A gas laser according to claim 21 **[any of claims 21 - 23]** and
2 wherein said first mirror structure comprises:

3 a first mirror surface which is operative to decrease the diameter of the annular
4 coherent beam from said first diameter and to expand the thickness of the annular coherent beam
5 from said first thickness;

6 a second mirror surface which is operative to focus an annular beam reflected by
7 said first mirror surface to a location located interior of said pair of coaxial spaced electrodes;
8 and

9 a spatial filter disposed at said location located interior of said pair of coaxial
10 spaced electrodes.

1 25. A gas laser according to claim 24 and wherein said second mirror structure
2 comprises:

3 a third mirror surface located at an opposite end of the annular optical cavity.

1 26. (Amended) A gas laser according to claim 19 **[any of claims 19 - 23]** and
2 also comprising an output coupler.

1 27. A gas laser comprising:
2 an enclosure;
3 an annular optical cavity defined by inner and outer coaxial spaced electrodes
4 disposed within said enclosure and which produces art annular coherent beam; and
5 a plurality of RF power supplies mounted onto said enclosure and coupled to said outer electrode
6 at multiple locations thereon distributed along the length and circumference thereof, thereby to
7 provide generally homogeneous power and voltage distribution throughout said cavity.

1 28. A gas laser according to claim 27 and wherein the inner electrode is
2 grounded.

1 29. (Amended) A gas laser according to claim 27 [or claim 28] and
2 comprising a grounded structure surrounding the annular optical cavity.

1 30. A gas laser according to claim 29 and wherein first and second ends of
2 said outer electrode are coupled to said grounded structure via a plurality of induction coils.

1 31. (Amended) A gas laser according, to claim 27 [any of claims 27 — 30]
2 and also comprising:

3 a grounded structure surrounding the annular optical cavity and including first and
4 second portions having precisely formed first and second mating surfaces,

5 said first portion having machined thereon a first mirror structure located at one
6 end of the annular optical cavity; and

7 said second portion having machined thereon a second mirror structure located at
8 one end of the annular optical cavity.

1 32. A gas laser according to claim 31 and wherein said first mating surface
2 and said first mirror structure are machined together so as to ensure desired alignment
3 therebetween.

1 33. (Amended) A gas laser according to claim 30 [or claim 31] and wherein
2 said second mating surface and said second mirror structure are machined together so as to
3 ensure desired alignment therebetween.

1 34. (Amended) A gas laser according to claim 30 [any of claims 30 - 33] and
2 wherein said first mirror structure comprises:

3 a first mirror surface which is operative to decrease the diameter of the annular
4 coherent beam from said first diameter and to expand the thickness of the annular coherent beam
5 from said first thickness;

6 a second mirror surface which is operative to focus an annular beam reflected by
7 said first mirror surface to a location located interior of said pair of coaxial spaced electrodes;
8 and

9 a spatial filter disposed at said location located interior of said pair of coaxial
10 spaced electrodes.

1 35. A gas laser according to claim 34 and wherein said second mirror structure
2 comprises:

3 a third mirror surface located at an opposite end of the annular optical cavity.

1 36. (Amended) A gas laser according to claim 31 [any of claims 31 - 35]
2 and also comprising an output coupler.

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